

**POWERED COPING SAW**

I CLAIM:

1. (currently amended) A saw including:

2 a blade assembly having a proximal end; said blade assembly including:

an elongate, thin blade having a longitudinal axis including

4 a proximal end; and

a distal end; and

6 a rigid frame including:

a proximal end connected to said proximal end of said blade; and

8 a distal end connected to said distal end of said blade; said frame

for supporting said blade in tension;

10 a housing including:

handle means for holding said saw in a hand,

12 a rotary motor mounted to said housing including:

a drive shaft rotating about a shaft axis including:

14 a front end;

power means for powering said motor;

16 a piston slideably and non-rotatably supported in said housing including:

a front end connected to said proximal end of said blade assembly for

18 moving said blade assembly along the longitudinal axis of said blade coincident with piston movement; and

20 a rear end; and

motion converter means for connecting said front end of said drive shaft to said

22 rear end of said piston for converting rotary motion of said drive shaft into reciprocating linear motion of said piston; said motion converter means including:

24 an exterior surface on said drive shaft front end including:

a circumferential raceway in a plane [at an] at an angle to the shaft

26 axis;

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28 a cap on said rear end of said piston having an inside surface; said cap
fitting over said exterior surface of said front end of said drive shaft; and
coupling means moving in said raceway for coupling with said cap to
30 move said cap.

2. (canceled).

3. (previously presented) The saw of Claim 1 wherein:

2 said circumferential raceway is semicircular in cross-section; and
said coupling means includes:
4 a hemispherical orifice in said inside surface of said cap; and
a ball bearing coupling said raceway and said hemispherical orifice.

4. (canceled)

5. (currently amended) A saw including:

2 a blade assembly having a proximal end; said blade assembly including:
an elongate, thin blade having a longitudinal axis including
4 a proximal end; and
a distal end; and
6 a rigid frame including:
a proximal end connected to said proximal end of said blade; and
8 a distal end connected to said distal end of said blade; said frame
for supporting said blade in tension;
10 a generally cylindrical, elongate housing having a longitudinal axis and an outside
surface adapted for holding said saw in a hand,
12 a rotary motor mounted within said housing including:
a drive shaft rotating about a shaft axis; the shaft axis parallel to the housing
14 axis; said drive shaft including:
a front end;
16 power means for powering said motor;

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18 a piston slideably and non-rotatably supported in said housing so as to be movable
parallel to the housing axis; including:
20 a front end connected to said proximal end of said blade assembly for
moving said blade assembly along the longitudinal axis of said blade coincident with piston
movement; and
22 a rear end; and
24 motion converter means for connecting said front end of said drive shaft to said
rear end of said piston for converting rotary motion of said drive shaft into reciprocating
linear motion of said piston; said motion converter means including:
26 an exterior surface on said drive shaft front end including:
28 a circumferential raceway in a plane [at an] at an angle to the shaft
axis;
30 a cap on said rear end of said piston having an inside surface; said cap
fitting over said exterior surface of said front end of said drive shaft; and
32 coupling means moving in said raceway for coupling with said cap to
move said cap.

6. (currently amended) The saw of Claim 5 wherein:

2 said circumferential raceway is semicircular in cross-section; and
said coupling means includes:
4 a hemispherical orifice in said [interior] inside surface of said cap; and
a ball bearing coupling said raceway and said hemispherical orifice.

7. (previously presented) The saw of Claim 5 wherein:

2 said motor is an electric motor.

8. (original) The saw of Claim 7 wherein:

2 said power means is an electrical cord.

9. (currently amended) In combination:

2 a full dental arch model including:

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a positive die of a full dental arch including:

a plurality of teeth; and

6 an arch plate connected to said die; said full arch model being U-shaped in top view with opposing left and right sections;

8 a coping saw for cutting individual dies from said dental model including:

a blade assembly having a proximal end; said blade assembly including:

10 an elongate, blade having a longitudinal axis and having a thickness adapted for cutting individual dies from said model including

12 a proximal end; and

a distal end; and

14 a rigid frame including:

16 a proximal end connected to said proximal end of said blade; and
a distal end connected to said distal end of said blade; said frame
for supporting said blade in tension;

18 a housing including:

handle means for holding said saw in a hand,

20 a rotary motor mounted to said housing including:

a drive shaft rotating about a shaft axis including:

22 a front end;

power means for powering said motor;

24 a piston slideably and non-rotatably supported in said housing including:

a front end connected to said blade assembly for moving said blade assembly

26 along the longitudinal axis of said blade coincident with piston movement; and

a rear end; and

28 motion converter means for connecting said front end of said drive shaft to said
rear end of said piston for converting rotary motion of said drive shaft into reciprocating
30 linear motion of said piston resulting in a stroke length of said blade assembly of less
than the distance between opposing U-sections along a cut line; said motion converter
32 means including:

an exterior surface on said drive shaft front end including:

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34 a circumferential raceway in a plane at an angle to the shaft axis;
 a cap on said rear end of said piston having an inside surface; said cap
36 fitting over said exterior surface of said front end of said drive shaft; and
 coupling means moving in said raceway for coupling with said cap to
38 move said cap.

10. (original) The combination of Claim 9 wherein:

2 said housing is generally cylindrical and elongate having a longitudinal axis and an
 outside surface adapted for holding said saw in a hand.

11. (original) The combination of Claim 10 wherein:

2 the shaft axis of said drive shaft is parallel to the housing axis; and
 said piston moves parallel to the housing axis.

12. (canceled)

13. (currently amended) The combination of Claim [12] 9 wherein:

2 said circumferential raceway is semicircular in cross-section; and
 said coupling means includes:
4 a hemispherical orifice in said inside surface of said cap; and
 a ball bearing coupling said raceway and said hemispherical orifice.

14. (original) The combination of Claim 9 wherein:

2 said motor is an electric motor.

15. (original) The combination of Claim 14 wherein:

2 said power means is an electrical cord.

16. (cancelled)

17. (cancelled)